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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/494,761	01/31/2000	Hyeon Jun Kim	P-082	3903

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EXAMINER	
SHERALI, ISHRAT I	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/494,761	KIM ET AL.	
	Examiner	Art Unit	
	Sherali Ishrat	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/8/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-19 and 22-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-11* is/are allowed.

6)☒ Claim(s) *5-8,12-19 and 22-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment/Arguments

1. This action is in response to amendment/arguments received on 6/08/2004.

Based on the persuasive arguments rejection under 35 U.S.C 112 first paragraph, for failing to enable the subject in claims 6, 14-19, 22-26 is withdrawn.

Applicant's arguments for claim 5, are fully considered, however they are not persuasive with respect to art rejection. See the remarks section for detail discussion.

Examiner apologize for reopening the prosecution because of 35 U.S.C 101 issue, obviousness type double patenting for claims 6, 14-19, 22-26 and newly found reference to Chua et al. (Fast signature-based color-spatial image retrieval, IEEE 0-8186-7819-4/97) and Ardizzoni et al. (Windsurf: region-based image retrieval using wavelets, IEEE Inpec Accession Number: 6359062):

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 14-19 and 22-26 are rejected under 35 U.S.C 101 as being non-statutory.

Regarding claim 14, claim recites "An image data structure, comprising: a first grid; and second grid, wherein the first grid and the second grid expresses a feature of an image at different resolution, wherein each of cells in the first grid is a first value and a second value for representing the spatial color feature of image, and wherein the first value is a regional representative color and second value is reliability score indicative of

the an accuracy of the region representative color". Claiming an image data structure is non-statutory. Claims15-19 and 22-26 are dependent on claim 14 therefore they are also rejected.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 14-19, 22-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,721,447 in view of Vellaikal et al. (Joint spatial-spectral indexing for image retrieval, IEEE 9-7803-3258-X/96) .

Regarding claim 14 of instant application and claim 1 of U.S. Patent No. 6,721,447 recites:

each of cells is assigned a first value and second value representing the spatial color feature of image (claim 14 of instant application, lines 4-5) which is same as color value that represents an image region and reliability of the representative color value (U.S. Patent No. 6,721,447, claim 1, col. 9, lines 4-6, each color region [cell] is assigned two values, first is color value and second value is reliability of the representative color value);

first value is a regional representative color and the second value is reliability score indicative of accuracy of the regional representative color (claim 14 of instant application, lines 5-6) which is same as color value that represents an image region and reliability of the representative color value (U.S. Patent No. 6,721,447, claim 1, col. 9, lines 4-6).

U.S. Patent No. 6,721,447 has not shown a first grid and second grid, and the first grid and second grid are related express a feature of an image at different resolution.

In the same field of endeavor, Vellaikal shows first grid and second grid, and first grid and second grid express a feature of an image at different resolution (Vellaikal,

in figure 1 (a) shows first grid and second grid, and first and second grid are express a feature of an image at different resolution and Vellaikal states on page 867, paragraph 2, right-column, lines 15-20, image features at different resolutions and location).

Regarding claim 15, Vellaikal discloses a first grid includes first number of cells and second grid includes second number of cells (See Vellaikal, figure 1 a, Vellaikal shows level 1 [first grid] includes four cells and level 2 [second grid] includes sixteen cells).

Regarding claim 16, Vellaikal discloses second number of cells is greater than first number of cells (See Vellaikal that level 2 [second grid] includes sixteen cells which is greater than four cell in level 1 [first grid]).

Regarding claim 17 , Vellaikal discloses first and second grid are hierarchically related (See Vellaikal, figure 1a and paragraph 2, lines 10-12 shows level 1 [first grid] and level 2 [second grid] are related hierarchically).

Regarding claim 18, Vellaikal discloses second grid includes plurality of cell each group representing feature of image at different areas with a respective one cells in the first grid (See Vellaikal, figure 1a, second paragraph, page 867, right-column, lines 10-15, Vellaikal shows hierarchical spatial procedure involving quad tree based image splitting, array is equally subdivided into four quadrant i.e. Vellaikal shows in figure 1 a second grid [level 2] includes plurality of cell each group representing feature of image at different areas with a respective one cells in the first grid [level 1]).

Regarding claim 19, Vellaikal disclose feature is a color spatial feature (Vellaikal in figure 1 b and paragraph 2, page 868, left-column, lines 14-16, feature is spatial color feature).

Regarding claim 22, Vellaikal discloses each cell in the second grid is assigned multiple values for representing the spatial color feature (See Vellaikal shows in paragraph, 3, page 868, right-column, lines 20-28, for each node [cell in the grid] DCT coefficients are obtained and DC coefficient is calculated which represent average color at given node [cell] first value is color and second value is average of the color i.e. each cell in the second grid/first grid is assigned multiple values for representing the spatial color feature

Regarding claim 23, Vellaikal discloses number of cells in the first grid and second grid are proportional to the size of image (See Vellaikal , paragraph 2, page 867, right-column, lines 15-17, figure 1 a, first and second grids [level 1 and level 2] level 2 shows image features in higher resolution than level 1 i.e. number of cell is proportional to the size [resolution] of the image).

Regarding claim 24, Vellaikal discloses image has square shape and is uniformly divided into the cells of the grid (Vellaikal in figures 1a and b shows image has square shape and is uniformly divided into the cells of the grid).

Regarding claim 25, Vellaikal discloses image has non square shape (See Vellaikal, figure 1b, [middle of the figure] image has none square shape), and

first side of the image is divided uniformly and second side of the image is divided based on a dividing unit of first side (Vellaikal shows in figure 1 a level 1 first side is

divided into two cells and similarly other side is divided into o two cells i.e. four equal cells), division forming the cells in the first grid (See Vellaikal figure 1 a division of four equal cells is level 1[first grid]).

Regarding claim 26, Vellaikal each of the cell in first grid has first size and second grid has second size (See Vellaikal in figure 1 a shows level 1 cells size is bigger than the size of cells level 2).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 5, 7-8,12 and 27 are rejected under 35 U.S.C 102 (b) as being anticipated by Vellaikal et al. (Joint spatial-spectral indexing for image retrieval, IEEE 9-7803-3258-X/96) .

Regarding claim 5, Vellaikal discloses an image search (Vellaikal, page 867, paragraph 2, right-column, lines 15-17, Vellaikal states "image features at different spatial resolution is indexed by following such multi-resolution", image indexing corresponds to image search);

determining color similarity between a reference image and a target image (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R and page 868, paragraph 3, right-

column, lines 25-27, Vellaikal states "A Euclidean distance measure can be used to calculate between two image with respect to this feature" and Vellaikal shows feature is color in terms of YC_bC_r color space therefor Vellaikal shows determining color similarity between a reference image and a target image);

each of which is represented by hierarchical grid levels (Vellaikal, figure 1 (a) shows images are represented by hierarchical grid levels, Vellaikal states in paragraph 2, page 867, right-column, lines 9-12 "regions of image are split into hierarchical grid levels". Examiner notes that for comparing two images such as Q and T with respect to sub region level as shown by Vellaikal in paragraph 2, page 868, left-column, lines 10-12 each image has to be split similarly in hierarchical grid levels);

determining step includes cross-matching different grid levels of the reference and target image (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R (r1, r2, r3.....rn)" cross-matching means determining similarity between two different images and Vellaikal shows determining similarity between two different images [cross-matching] and Vellaikal determining similarity of two images with respect to regions [grid levels] r1, r2, r3 ....rn i.e Vellaikal is determining similarity between two images with respect to regions r1, r2, r3.....rn i.e Vellaikal does not match only one region instead Vellaikal is matching different regions, therefore Vellaikal shows cross-matching [similarity between two images] different grid levels [regions r1, r2, ...rn] of the reference and target image);

searching image based on a content based query by a user (Vellaikal paragraph 2, page 867, right-column, lines 1-5, Vellaikal states "image retrieval using sub-portion of the image by processing queries" which corresponds to searching image based on a content based query by a user).

Regarding claim 7, Vellaikal disclose matching grid levels of reference image with respective ones of the grid levels of the target image (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to regions R (r1, r2, r3.....rn)" which corresponds to matching grid levels of reference image with respective ones of the grid levels of the target image).

Regarding claim 8, Vellaikal disclose matching region representative color values between grid levels of the reference and target images (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R (r1, r2,....rn) and page 868, paragraph 3, right-column, lines 25-27, Vellaikal states "A Euclidean distance measure can be used to calculate similarity between two image with respect to this feature" and Vellaikal shows feature is color in terms of YC_bC_r color space which corresponds to disclose matching region representative color values between grid levels of the reference and target images).

Regarding claim 12, Vellaikal disclose a cell similarity between grid levels of the reference and target image is used for searching a same position and different position between same levels in the case that search is performed by matching a color value (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R (r1, r2, r3.....rn)and page 868,

paragraph 3, right-column, lines 25-27, Vellaikal states "A Euclidean distance measure can be used to calculate similarity between two image with respect to this feature" and Vellaikal shows feature is color in terms of YC_bC_r color space which corresponds to disclose matching region representative color values between grid levels of the reference and target images and Vellaikal in paragraph 2, page 867, right-column, lines 1-5, "images are search/retrieve using queries" Vellaikal has to search a same position and different position to determine the best match between regions of two images for same hierarchical level).

Regarding claim 27, Vellaikal disclose determining step is performed using multilevel data structure which is expressed based on an image having two different hierarchical levels (Vellaikal, figure 1a shows multilevel data structure which is expressed based on an image having two different hierarchical levels [level 0 and level 1 and level 2], and Vellaikal in paragraph 2, page 867, right-column, lines 10-18 states "splitting of image in hierarchical structure with different resolutions which corresponds to multilevel data structure which is expressed based on an image having two different hierarchical levels).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 6, 14-19, 22-26 are rejected under 35 U.S.C 103 (a) as being unpatentable over Vellaikil et al. (Joint spatial-spectral indexing for image retrieval, IEEE 9-7803-3258-X/96) in view of Chua et al. (Fast signature-based color-spatial image retrieval, IEEE 0-8186-7819-4/97).

Regarding claim 6, Vellaikal shows determining step includes determining color similarity between a reference and a target image (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R and page 868, paragraph 3, right-column, lines 25-27, Vellaikal states "A Euclidean distance measure can be used to calculate between two image with respect to this feature" and Vellaikal shows feature is color in terms of YC_bC_r color space therefor Vellaikal shows determining color similarity between a reference image and a target image).

Vellaikal however have not disclosed determining similarity of reliability information indicative of accuracies of the region representative color values between the grid levels of the reference and the target image.

In the same field of endeavor Chua discloses determining similarity of reliability information indicative of accuracies of the region representative color values between the grid levels of the reference and the target image (Chua on page 363, paragraph 3.1, right-column lines 7-12, states "For a given color cell, each cell is examined to determine the percentage of the total number of pixels in the cell having that color". If this percentage is greater than a predefined threshold value then the cell

is said to be represented by this color". This corresponds to reliability score indicative of an accuracy of the region representative color, Chua on page 364, paragraph 3.1, left-column, lines 23-27, "each cell can be represented by a bit. If the cell satisfies the threshold value, the bit is set, otherwise, it is cleared. Hence for each color we obtain bitstream, call the color signature, that capture the spatial distribution of that color". Examiner notes that Chua establishes color-spatial signature of color region in the image based on the reliability score [above or below threshold], and Chua on page 364, paragraph 3.2, right-column, lines 2-8, Chua is comparing two image for retrieval process by comparing the color-signature of two image, which corresponds to determining similarity of reliability information indicative of accuracies of the region representative color values between the grid levels of the reference and the target image).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Chua to determine similarity of reliability information indicative of accuracies of the region representative color values between the grid levels of the reference and the target image in the system of Vellaikal because such a system determine color similarity of two images with high accuracy by comparing color accuracy/ reliability of image regions.

Regarding claim 14, Vellaikal discloses a first grid (See Vellaikal, in figure 1a shows level 1 which is first grid and paragraph 2, page 867, right-column, 10-12,

Vellaikal shows hierarchical spatial structuring by quad tree based splitting level0, level 1 and level 2);

a second grid (See Vellaikal, in figure 1a shows level 2 which is second grid and paragraph 2, page 867, right-column, 10-12, Vellaikal shows hierarchical spatial structuring by quad tree based splitting level 0, level 1 and level 2);

the first and the second grid expresses a feature of an image at different resolution (See Vellaikal, figure 1 (a), paragraph 2, page 867, right-column , lines16-18, Vellaikal shows level 0, level 1 and level 2 shows image features at different resolutions i.e. the first and the second grid expresses a feature of an image at different resolution).

each of the cells in the first grid is assigned a first value and a second value for representing the color feature of image (See Vellaikal shows in paragraph, 3, page 868, right-column, lines 20-28, for each node [cell in the grid] DCT coefficients are obtained and DC coefficient is calculated which represent average color at given node i.e. first value is color and second is average of the color), and

first value is a regional representative color (See Vellaikal shows in paragraph, 3, page 868, right-column, lines 20-28, for each node [cell in the grid] DCT coefficients are obtained and DC coefficient is calculated which represent average color at given node i.e. first value is color and second is average of the color).

Vellaikal however have not disclosed the second value is reliability score indicative of an accuracy of the region representative color.

In the same field of endeavor chua disclose, reliability score indicative of an accuracy of the region representative color (Chua on page 363, paragraph 3.1, right-column lines 7-12, states "For a given color cell, each cell is examined to determine the percentage of the total number of pixels in the cell having that color". If this percentage is greater than a predefined threshold value then the cell is said to be represented by this color". This corresponds to reliability score indicative of an accuracy of the region representative color).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Chua of using reliability score indicative of an accuracy of the region representative color in the system of Vellaikal because such a system determine color similarity of two images with high accuracy by comparing color accuracy/ reliability of image regions.

Regarding claim 15, Vellaikal discloses a first grid includes first number of cells and second grid includes second number of cells (See Vellaikal, figure 1 a, Vellaikal shows level 1 [first grid] includes four cells and level 2 [second grid] includes sixteen cells).

Regarding claim 16, Vellaikal discloses second number of cells is greater than first number of cells (See Vellaikal that level 2 [second grid] includes sixteen cells which is greater than four cell in level 1 [first grid]).

Regarding claim 17 , Vellaikal discloses first and second grid are hierarchically related (See Vellaikal, figure 1a and paragraph 2, lines 10-12 shows level 1 [first grid] and level 2 [second grid] are related hierarchically).

Regarding claim 18, Vellaikal discloses second grid includes plurality of cell each group representing feature of image at different areas with a respective one cells in the first grid (See Vellaikal, figure 1a, second paragraph, page 867, right-column, lines 10-15, Vellaikal shows hierarchical spatial procedure involving quad tree based image splitting, array is equally subdivided into four quadrant i.e. Vellaikal shows in figure 1 a second grid [level 2] includes plurality of cell each group representing feature of image at different areas with a respective one cells in the first grid [level 1]).

Regarding claim 19, Vellaikal disclose feature is a color spatial feature (Vellaikal in figure 1 b and paragraph 2, page 868, left-column, lines 14-16, feature is spatial color feature).

Regarding claim 22, Vellaikal discloses each cell in the second grid is assigned multiple values for representing the spatial color feature (See Vellaikal shows in paragraph, 3, page 868, right-column, lines 20-28, for each node [cell in the grid] DCT coefficients are obtained and DC coefficient is calculated which represent average color at given node [cell] first value is color and second value is average of the color i.e. each cell in the second grid/first grid is assigned multiple values for representing the spatial color feature

Regarding claim 23, Vellaikal discloses number of cells in the first grid and second grid are proportional to the size of image (See Vellaikal , paragraph 2, page

867, right-column, lines 15-17, figure 1 a, first and second grids [level 1 and level 2] level 2 shows image features in higher resolution than level 1 i.e. number of cell is proportional to the size [resolution] of the image).

Regarding claim 24, Vellaikal discloses image has square shape and is uniformly divided into the cells of the grid (Vellaikal in figures 1a and b shows image has square shape and is uniformly divided into the cells of the grid).

Regarding claim 25, Vellaikal discloses image has non square shape (See Vellaikal, figure 1b, [middle of the figure] image has none square shape), and

first side of the image is divided uniformly and second side of the image is divided based on a dividing unit of first side (Vellaikal shows in figure 1 a level 1 first side is divided into two cells and similarly other side is divided into o two cells i.e. four equal cells), division forming the cells in the first grid (See Vellaikal figure 1 a division of four equal cells is level 1[first grid]).

Regarding claim 26, Vellaikal each of the cell in first grid has first size and second grid has second size (See Vellaikal in figure 1 a shows level 1 cells size is bigger than the size of cells level 2).

10. Claim 13 is rejected under 35 U.S.C 103 (a) as being unpatentable over Vellaikil et al. (Joint spatial-spectral indexing for image retrieval, IEEE 9-7803-3258-X/96) in view of Ardizzoni et al. (Windsurf: region-based image retrieval using wavelets, IEEE Inpec Accession Number: 6359062).

Regarding claim 13, Vellaikal discloses an image search (Vellaikal, page 867, paragraph 2, right-column, lines 15-17, Vellaikal states "image features at different spatial resolution is indexed by following such multi-resolution", image indexing corresponds to image search);

determining color similarity between a reference image and a target image (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R and page 868, paragraph 3, right-column, lines 25-27, Vellaikal states "A Euclidean distance measure can be used to calculate between two image with respect to this feature" and Vellaikal shows feature is color in terms of YC_bC_r color space therefor Vellaikal shows determining color similarity between a reference image and a target image);

each of which is represented by hierarchical grid levels (Vellaikal, figure 1 (a) shows images are represented by hierarchical grid levels, Vellaikal states in paragraph 2, page 867, right-column, lines 9-12 "regions of image are split into hierarchical grid levels". Examiner notes that for comparing two images such as Q and T with respect to sub region level as shown by Vellaikal in paragraph 2, page 868, left-column, lines 10-12 each image has to be split similarly in hierarchical grid levels);

determining step includes cross-matching grid levels of the reference and target image (Vellaikal, paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R (r1, r2, r3.....rn)" cross-matching means determining similarity between two different images and Vellaikal shows determining similarity between two different images [cross-matching] and

Vellaikal determining similarity of two images with respect to regions [grid levels] r1, r2, r3 ....rn i.e Vellaikal is determining similarity between two images with respect to regions r1, r2, r3.....rn i.e Vellaikal does not match only one region instead Vellaikal is matching different regions, therefore Vellaikal shows cross-matching [similarity between two images] grid levels [regions r1, r2, ...rn] of the reference and target image);

searching image based on a content based query by a user (Vellaikal paragraph 2, page 867, right-column, lines 1-5, Vellaikal states "image retrieval using sub-portion of the image by processing queries" which corresponds to searching image based on a content based query by a user).

Vellaikal however have not disclosed region matching operation between grid levels of the reference and target image is directed to searching at a same position of different level and at different position when searching color similarity between different levels.

In the same field of endeavor Ardizzoni, discloses on page 5, paragraph 3.1 lines 7-9, each region qi of Q is associated to its "best match" region tj, i.e regions size is not taken taken into account. Ardizzoni is matching regions by searching unlike Vellaikal, who is only matching respective regions. Ardizzoni image regions are match without the respect of regions size.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Ardizzoni of image region matching by searching for the best match without the respect of image region size in the

system of Vellaikal by searching image regions at a same position of different level and at different position when searching for color similarity between different levels because such a system provide the superior approach when considering difficult queries i.e queries having a low number of similar images.

Remarks

11. In the amendment/arguments filed on 6/08/2004, Applicant argued the following:

Vellaikal reference does not disclose cross matching different grid levels.

Vellaikal, in paragraph 2, page 868, left-column, lines 10-12, Vellaikal states "The similarity of two images with respect to region R (r1, r2, r3.....rn)" cross-matching means determining similarity between two different images and Vellaikal shows determining similarity between two different images [cross-matching] and Vellaikal determining similarity of two images with respect to regions [grid levels] r1, r2, r3 ....rn i.e Vellaikal is determining similarity between two images with respect to regions r1, r2, r3.....rn i.e Vellaikal does not match only one region instead Vellaikal is matching different regions, therefore Vellaikal shows cross-matching [similarity between two images] different grid levels [regions r1, r2, ...rn] of the reference and target image.

Allowable Subject Matter

12. Claims 9-11 are allowable over prior art of record.

Communication

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 703-308-9589. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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